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WAVEGUIDE STRUCTURE

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**ABSTRACT**

A method for forming a high optical confinement waveguide structure by: forming a silicon-based waveguide on a substrate by depositing a waveguide layer of silicon containing material onto the substrate. The material is selected in a manner such that the refractive index of the waveguide is greater than the refractive index of the substrate. The silicon-based waveguide is further formed by etching the deposited waveguide structure such as to form a ridge structure in the deposited waveguide layer. An optical signal processing element is formed in and integrated with the deposited waveguide layer.